The listing of claims will replace all prior versions and listing of claims in the application:

Listing of Claims

Claim1. (currently amended) A system for controlling the hydraulic actuated components, including snow-ice control components mountable upon a truck having a wheel supported frame, an internal combustion engine, a cab, a support portion configured to receive a load, and a hydraulic pump connected in driven relationship with said engine having a pump output and input, said truck being movable along a roadway at given velocities, comprising:

an operator accessible process controller assembly mounted within said cab having an operator interface portion with a display and one or more manually controllable switch components actuable to provide command inputs to effect control of said hydraulically actuated components, said process controller assembly being connected with a source of electrical power and having a process controller assembly bidirectional data transmission port;

a hermetically secure composite assembly supported from said frame comprising a hydraulic fluid reservoir portion having a fluid level and a suction outlet connectable in fluid transfer relationship with said pump input, further comprising ~~having~~ a manifold portion supporting a plurality of electrically actuated hydraulic valves coupled in fluid transfer relationship with said pump output and said hydraulically actuated components and actuateable in response to control inputs, said composite assembly having a composite control assembly including a composite assembly controller responsive to said command inputs to provide composite assembly controller outputs deriving said control inputs to said electrically actuated hydraulic valves, said control assembly being connected with a source of electrical power and said composite assembly controller having a bidirectional transmission port;

a hydraulic return conduiting assembly coupled in fluid flow communication between said composite assembly hydraulic fluid reservoir portion and said hydraulically actuated components; and

a bidirectional data transmission bus assembly coupled in command input conveying relationship between said controller assembly bidirectional data transmission port and said composite assembly controller bidirectional transmission port.

Claim 2. (original) The system of claim 1 in which:

said composite assembly control assembly includes a driver network responsive to said manifold controller outputs and comprising one or more multi-channel drivers deriving a

plurality of driver signals and a plurality of solid-state switches coupled in controlling relationship with said electrically actuated hydraulic valves and responsive to said driver signals to provide said control inputs.

Claim 3. (original) The system of claim 1 in which:

a said snow-ice control component is a salt-feed auger coupled in driven relationship with an auger hydraulic motor having an input coupled in hydraulic fluid flow relationship with the output or outputs of one or more auger designated said hydraulic valves and having an output in hydraulic fluid flow relationship with said reservoir portion;

said composite assembly control assembly further comprises a first hydraulic fluid pressure sensor responsive to the hydraulic fluid pressure at said output or outputs of said one or more auger designated hydraulic valves extending to said auger hydraulic motor input to provide a high pressure signal; and

a second hydraulic fluid pressure sensor responsive to the hydraulic fluid pressure of the output of said auger hydraulic motor to provide a low pressure signal; and

said process controller is generally responsive to the difference between said high pressure signal and said low pressure signal to determine the load experienced at said auger and is configured to provide an operator perceptible cue in response to a determined low auger load condition.

Claim 4. (currently amended) The system of claim 1 in which said ~~reservoir and~~ composite assembly hydraulic fluid reservoir portion comprises:

a reservoir generally having a bottom surface surmounted by one or more vertically upstanding walls extending a fluid reservoir level height;

an elongate fluid receiving chamber comprising side and top portions extending along said bottom surface between a fluid dispensing region and a fluid receiving region;

a fluid return conduit having an input coupled in fluid flow transfer communication with said hydraulic return conduiting assembly and a return fluid outlet extending within said fluid receiving chamber at said fluid receiving region; and

an outgasing transfer portion extending through said fluid receiving chamber top portion at said fluid receiving region and effective to transfer gas from fluid expressed from said return fluid outlet outwardly from said fluid receiving region;

Claim 5. (original) The system of claim 4 in which:

said fluid receiving chamber is configured with a said suction outlet configured as a suction port extending from said fluid receiving chamber fluid dispensing region through a said upstanding wall.

Claim 6. (original) The system of claim 5 in which:

said fluid receiving chamber fluid dispensing region is configured with one or more inlet ports in fluid flow communication between said fluid dispensing region and hydraulic fluid within said reservoir located without said fluid receiving chamber.

Claim 7. (original) The system of claim 4 in which said fluid receiving chamber further comprises a fluid baffle extending generally from said bottom surface upwardly to a baffle top spaced from said fluid receiving chamber top portion, said fluid baffle being located intermediate said fluid dispensing region and said fluid receiving region.

Claim 8. (original) The system of claim 7 in which:

said baffle is slanted toward said fluid dispensing region to an extent effective to promote movement of hydraulic fluid expressed from said return fluid outlet toward the vicinity of said outgasing transfer portion.

Claim 9. (original) The system of claim 4 in which:

said return fluid outlet extending within said fluid receiving chamber is configured to promote the movement of hydraulic fluid expressed therefrom toward the vicinity of said outgasing transfer portion.

Claim10. (original) The system of claim 9 in which:

said return fluid outlet is configured as a conduit opening which is upwardly slanting toward the vicinity of said outgasing transfer portion.

Claim 11. (original) The system of claim 4 in which:

said outgoing transfer portion is configured as one or more apertures.

Claim 12. (original) The system of claim 1 in which said hermetically secure composite assembly further comprises a pressure establishing valve located above said fluid level and configured to maintain a positive gas pressure within said composite assembly.

Claim 13. (original) The system of claim 1 in which in which said hermetically secure composite assembly further comprises:

a hydraulic fluid filler port located above said hydraulic fluid reservoir portion fluid level; and

a pressurizing filler breather cap removably coupled upon said hydraulic fluid filler port and configured to maintain a positive gas pressure within said composite assembly.

Claim 14. (original) The system of claim 1 in which:

said manifold portion and said control assembly of said composite assembly are located above said hydraulic fluid reservoir portion.

Claim 15. (original) The system of claim 1 in which:

said bidirectional data transmission bus is a Recommended Standard 485 bus.

Claim16. (original) The system of claim 1 in which:

a snow-ice control component is a salt feed auger coupled in driven relationship with an auger hydraulic motor having an input coupled in hydraulic fluid flow driven relationship with an auger designated array of three or more said electrically actuated hydraulic valves hydraulically coupled from first to last with a common hydraulic array input and a respective binary succession of hydraulic flow rate outputs coupled in common with said auger hydraulic motor input; and

said process controller assembly provides said command inputs to derive said control inputs to said auger designated array of electrically actuated valves in correspondence with said given velocities.

Claim 17. (original) The system of claim 1 in which:

a snow-ice control component is a snow-ice control liquid pump coupled in driven relationship with a pump hydraulic motor having an input coupled in hydraulic fluid flow driven relationship with a pump designated array of three or more said electrically actuated hydraulic valves hydraulically coupled from first to last with a common hydraulic array input and a respective binary succession of hydraulic flow rate outputs coupled in common with said pump motor input; and

said process controller assembly provides said command inputs to derive said control inputs to said pump designated array of electrically actuated valves in correspondence with said given velocities.

Claim 18. (original) A system for controlling the hydraulically actuated components, including snow-ice control components, mountable upon a truck having a wheel supported frame, an engine, a cab, a support portion configured to receive a load, and a hydraulic pump connected in driven relationship with said engine having a pump output and input, said truck being movable along a roadway at given velocities, comprising:

an operator accessible controller assembly mounted within said cab, having an operator interface portion with a display responsive to a display input to provide a visibly perceptible output and one or more switch components manually actuateable to provide switch conditions, and having an operator interface controller operationally coupled with said display and responsive to receive switch data corresponding with said switch conditions, said operator interface controller having a bidirectional data transmission port for receiving command inputs effecting the derivation of said display input and for receiving interrogate inputs to effect transmission of said switch data;

a hermetically secure composite assembly supported from said frame, comprising a hydraulic fluid reservoir portion having a fluid level and a suction outlet connectable in fluid transfer relationship with said pump input, further comprising a manifold portion supporting a plurality of electrically actuated hydraulic valves coupled in fluid transfer relationship with said pump output and said hydraulically actuated components and actuateable in response to control inputs, said composite assembly having a composite control assembly including a composite assembly controller operationally coupled with said electrically actuated hydraulic valves, said composite assembly controller having a bidirectional data transmission port for receiving command inputs and is responsive thereto to provide composite assembly controller outputs effecting the derivation of said control inputs, and said bidirectional data transmission port is configured for receiving interrogate inputs to effect transmission of valve data corresponding with the state of actuation of said electrically actuated hydraulic valves;

a master controller located in said cab, having a bidirectional data transmission port and providing said command inputs and interrogate inputs at its said data transmission port;

a bidirectional data transmission assembly interconnecting said bidirectional data transmission ports of said master controller, said interface controller and said composite assembly controller in bidirectional data transfer relationship; and

a hydraulic return conduiting assembly coupled in fluid flow communication between said composite assembly hydraulic fluid reservoir portion and said hydraulically actuated components.

Claim 19. (original) The system of claim 18 in which:

said composite control assembly includes a driver network responsive to said composite assembly controller outputs and comprising one or more multi-channel drivers deriving a plurality of driver signals and

a plurality of solid-state switches coupled in controlling relationship with said electrically actuated hydraulic valves and responsive to said driver signals to provide said control inputs.

Claim 20. (original) The system of claim 19 in which:

said composite control assembly further comprises:

a source of power;

a relay assembly coupled in switching relationship between said source of power and said solid-state switches and actuateable to terminate the application of power thereto; and

a microprocessor supervisory circuit responsive in the absence said composite controller outputs to said driver network for an interval of time to effect said actuation of said relay assembly.

Claim 21. (original) The system of claim 19 in which:

said composite control assembly further comprises:

a source of power;

an electronics power supply having a given voltage level;

a relay assembly coupled in switching relationship between said source of power and said solid-state switches and actuateable to terminate the application of power thereto; and

a microprocessor supervisory circuit responsive to said given voltage level dropping to a low value to effect actuation of said relay assembly.

Claim 22. (original) The system of claim 19 in which:

said driver network comprises one or more multi-channel low voltage serial to high voltage parallel converters.

Claim 23. (original) The system of claim 18 in which:

said master controller is mounted with said operator accessible controller assembly.

Claim 24. (original) The system of claim 18 in which:

said composite control assembly further comprises a low hydraulic fluid level sensor mounted for response to said reservoir portion fluid level, operationally coupled with said composite assembly controller and responsive in the presence of a low level condition of hydraulic fluid to provide a low fluid output to said composite assembly controller deriving a low fluid condition datum thereat;

said composite assembly controller providing said low fluid condition datum to said composite assembly controller data transmission port in response to a said interrogation input; and

said master controller is responsive to a said low fluid datum conveyed thereto by said bidirectional data transmission assembly to provide a said command input to said operator interface controller bidirectional data transmission port deriving a said display input effecting a said visibly perceptible output as a low hydraulic fluid level cue.

Claim 25. (original) The system of claim 24 in which:

said operator accessible controller assembly further comprises an annunciator operationally coupled with said operator interface controller and responsive to an annunciator signal to provide an aurally perceptible output; and

said master controller is responsive to a said low fluid datum conveyed thereto by said bidirectional data transmission assembly to provide a command input to said operator interface controller bidirectional data transmission port deriving a said annunciator signal as a low hydraulic fluid level cue.

Claim 26. (original) The system of claim 18 in which:

said composite control assembly further comprises a temperature sensor having a temperature output corresponding with the temperature of hydraulic fluid at said reservoir portion;

said composite assembly controller is responsive to said temperature output to provide temperature data corresponding thereto at said composite assembly controller data transmission port in response to a said interrogation input; and

said master controller is responsive to said temperature data conveyed thereto by said bidirectional data transmission assembly to provide one or more command inputs to said composite assembly controller effecting said derivation of one or more said control inputs in correspondence with said temperature data.

Claim 27. (original) The system of claim 26 in which:

said master controller is responsive to said temperature data when representing an excessive hydraulic fluid temperature to provide a command input to said operator interface controller bidirectional data transmission port deriving a said display input effecting a said visibly perceptible output as an excessive temperature hydraulic fluid cue.

Claim 28. (original) The system of claim 26 in which:

said master controller is responsive to said temperature data when representing an excessive hydraulic fluid temperature to provide a command input to said composite assembly controller effecting termination of said control inputs.

Claim 29. (original) The system of claim 18 in which:

a said snow-ice control component is a salt feed auger coupled in driven relationship with an auger hydraulic motor having an input coupled in hydraulic fluid flow relationship with the output or outputs of one or more auger designated said hydraulic valves each having an output in fluid flow relationship with said reservoir portion;

said composite control assembly further comprises a first hydraulic fluid pressure sensor responsive to the hydraulic fluid pressure at said output or outputs of said one or more auger designated hydraulic valves extending to said auger hydraulic motor input to provide high pressure signals, and a second hydraulic fluid pressure sensor responsive to the hydraulic fluid pressure of the output of said auger hydraulic motor to provide a low pressure signal;

said composite assembly controller is responsive to a said interrogate input to acquire said high pressure signal and said low pressure signal as pressure data and provide said pressure data to said data transmission port thereof for conveyance along said bidirectional data transmission assembly to said master controller; and

said master controller is responsive to said pressure data to derive and evaluate auger motor load values.

Claim 30. (original) The system of claim 29 in which:

said master controller is responsive in the presence of a said auger motor load representing a low granular salt supply to provide a said command input to said operator interface controller bidirectional data transmission port deriving a said display input effecting a said visibly perceptible output as a low salt supply cue.

Claim 31. (original) The system of claim 18 in which:

said composite control assembly further comprises a filter circuit responsive to a sequence of speed data bits corresponding with said given vehicle velocities to derive filtered speed data bits;

said composite assembly controller is responsive to said filtered speed data bits to provide vehicle velocity data to said composite assembly controller data transmission port in response to a said interrogation input; and

said master controller is responsive to said vehicle velocity data to derive command inputs corresponding therewith to said composite assembly controller to provide said control inputs to said electrically actuated hydraulic valves.

Claim 32. (original) The system of claim 31 in which:

said composite control assembly further comprises a signal treatment circuit response to a two-speed input condition corresponding with a transmission range of said truck to derive a treated two-speed datum;

said composite assembly controller is responsive to said filtered speed data bits and said two-speed datum to provide vehicle velocity data to said composite assembly controller data transmission port in response to a said interrogation input; and

said master controller is responsive to said vehicle velocity data and said two-speed datum to provide command inputs corresponding therewith to said composite assembly controller to derive said control inputs to said electrically actuated hydraulic valves.

Claim 33. (original) The system of claim 18 further comprising:

a datalog and communications controller assembly located within said cab, having a communications controller operationally coupled with a memory and one or more serial

interface ports configured to receive data for submittal to said memory and having a bidirectional data transmission port coupled with said bidirectional transmission assembly and configured to receive a said command input to effect submittal of said data to memory.

Claim 34. (original) The system of claim 33 in which:

a said snow-ice control component is a plow with a plow position sensor having a position condition;

said composite control assembly further comprises a plow position signal treatment assembly responsive to said position condition to provide a treated plow position condition;

said composite assembly controller is responsive to a said interrogation input to provide plow position data to said composite assembly controller data transmission port; and

said master controller is responsive to said plow position data to provide a said command input to said datalog and communications controller effecting the submittal of said plow position data to said memory.

Claim 35. (original) The system of claim 33 in which:

said composite control assembly further comprises a filter circuit responsive to a sequence of speed data bits corresponding with said given vehicle velocities to derive filtered speed data bits;

said composite assembly controller is responsive to said filtered speed data bits to provide vehicle velocity data to said composite assembly controller data transmission port in response to a said interrogation input; and

said master controller is responsive to said vehicle velocity data to provide a said command input to said datalog and communications controller effecting the submittal of said vehicle velocity data to said memory.

Claim 36. (original) A system for controlling the hydraulically actuated components of a truck, including snow-ice components mountable upon said truck, said truck having a wheel supported frame, an engine, a cab, a dump bed configured to receive a load, and a hydraulic pump coupled in driven relationship with said engine having a pump output and input, said truck being movable along a roadway at given velocities, comprising:

An operator accessible controller assembly mounted within said cab, having an operator interface portion with a display responsive to a display input to provide a visibly

perceptible output and one or more switch components manually actuateable to provide switch conditions, and having an operator interface controller operationally coupled with said display and responsive to receive switch data corresponding with said switch conditions, said operator interface controller having a bidirectional data transmission port configured to receive command inputs effecting the derivation of said display input, and for receiving interrogate inputs to effect transmission of said switch data;

A hermetically secure composite assembly supported from said frame, having a hydraulic reservoir fluid portion comprising a reservoir generally having a bottom surface surmounted by one or more upstanding walls extending a fluid reservoir height, an elongate fluid receiving chamber comprising side and top portions extending along said bottom surface between a fluid dispensing region and a fluid receiving region, a fluid return conduit configured to receive return hydraulic fluid from said hydraulically actuated components and convey said return hydraulic fluid through a return fluid outlet extending within said fluid receiving chamber at said fluid receiving region, and an outgasing transfer portion extending through said fluid receiving chamber top portion of said fluid receiving region and effective to transfer gas from fluid expressed from said return fluid outlet outwardly from said fluid receiving region, a suction outlet in fluid transfer relationship with said fluid dispensing region and connectable in fluid transfer relationship with said pump input, said composite assembly further comprising a manifold portion supporting a plurality of electrically actuated hydraulic valves coupled in fluid transfer relationship with said pump output and said hydraulically actuated components and actuateable in response to control inputs, said composite assembly further comprising a composite control assembly including a composite assembly controller operationally coupled with said electrically actuated hydraulic valves and having a bidirectional data transmission port configured to receive command inputs and responsive thereto to provide composite assembly controller outputs effecting the derivation said of control inputs, said bidirectional data port being configured for receiving interrogate inputs to effect transmission of valve data corresponding with the state of actuation of said electrically actuated hydraulic valves;

a master controller located in said cab, having a bidirectional data transmission port and providing said command inputs and interrogate inputs at its said data transmission port; and

a bidirectional data transmission assembly interconnecting said bidirectional data transmission ports of said master controller, said interface controller and said composite assembly controller in bidirectional data transfer relationship.

Claim 37. (original) The system of claim 36 in which:

said composite control assembly includes a driver network responsive to said composite assembly controller outputs and comprising one or more multi-channel drivers deriving a plurality of driver signals and

a plurality of solid-state switches coupled in controlling relationship with said electrically actuated hydraulic valves and responsive to said driver signals to provide said control inputs.

Claim 38. (original) The system of claim 37 in which:

said composite control assembly further comprises:

a source of power;

a relay assembly coupled in switching relationship between said source of power and said solid-state switches and actuateable to terminate the application of power thereto; and

a microprocessor supervisory circuit responsive in the absence said composite controller outputs to said driver network for an interval of time to effect said actuation of said relay assembly.

Claim 39. (original) The system of claim 37 in which:

said composite control assembly further comprises:

a source of power;

an electronics power supply having a given voltage level;

a relay assembly coupled in switching relationship between said source of power and said solid-state switches and actuateable to terminate the application of power thereto; and

a microprocessor supervisory circuit responsive to said given voltage level dropping to a low value to effect actuation of said relay assembly.

Claim 40. (original) The system of claim 18 in which:

said composite control assembly further comprises a low hydraulic fluid level sensor mounted for response to the hydraulic fluid level at said reservoir portion, operationally coupled with said composite assembly controller and responsive in the presence of a low level condition of hydraulic fluid to provide a low fluid output to said composite assembly controller deriving a low fluid condition datum thereat;

said composite assembly controller providing said low fluid condition datum to said composite assembly controller data transmission port in response to a said interrogation input; and

said master controller is responsive to a said low fluid datum conveyed thereto by said bidirectional data transmission assembly to provide a said command input to said operator interface controller bidirectional data transmission port deriving a said display input effecting a said visibly perceptible output as a low hydraulic fluid level cue.

Claim 41. (original) The system of claim 36 in which:

said composite control assembly further comprises a temperature sensor having a temperature output corresponding with the temperature of hydraulic fluid at said reservoir portion;

said composite assembly controller is responsive to said temperature output to provide temperature data corresponding thereto at said composite assembly controller data transmission port in response to a said interrogation input; and

said master controller is responsive to said temperature data conveyed thereto by said bidirectional data transmission assembly to provide one or more command inputs to said composite assembly controller effecting said derivation of one or more said control inputs in correspondence with said temperature data.

Claim 42. (original) The system of claim 36 in which:

a said snow-ice control component is a salt feed auger coupled in driven relationship with an auger hydraulic motor having an input coupled in hydraulic fluid flow relationship with the output or outputs of one or more auger designated said hydraulic valves each having an output in fluid flow relationship with said reservoir portion;

said composite control assembly further comprises a first hydraulic fluid pressure sensor responsive to the hydraulic fluid pressure at said output or outputs of said one or more auger designated hydraulic valves extending to said auger hydraulic motor input to provide high pressure signals, and a second hydraulic fluid pressure sensor responsive to the hydraulic fluid pressure of the output of said auger hydraulic motor to provide a low pressure signal;

said composite assembly controller is responsive to a said interrogate input to acquire said high pressure signal and said low pressure signal as pressure data and provide said pressure data to said data transmission port thereof for conveyance along said bidirectional data transmission assembly to said master controller; and

said master controller is responsive to said pressure data to derive and evaluate auger motor load values.

Claim 43. (original) The system of claim 42 in which:

said master controller is responsive in the presence of a said auger motor load representing a low granular salt supply to provide a said command input to said operator interface controller bidirectional data transmission port deriving a said display input effecting a said visibly perceptible output as a low salt supply cue.

Claim 44. (original) The system of claim 36 in which:

said fluid receiving chamber is configured with a said suction outlet configured as a suction port extending from said fluid receiving chamber fluid dispensing region through a said upstanding wall.

Claim 45. (original) The system of claim 44 in which:

said fluid receiving chamber fluid dispensing region is configured with one or more inlet ports in fluid flow communication between said fluid dispensing region and hydraulic fluid within said reservoir located without and remote from said fluid receiving chamber.

Claim 46. (original) The system of claim 36 in which said fluid receiving chamber further comprises a fluid baffle extending generally from said bottom surface upwardly to a baffle top spaced from said fluid receiving chamber top portion, said fluid baffle being located intermediate said fluid dispensing region and said fluid receiving region.

Claim 47. (original) The system of claim 46 in which:

said baffle is slanted toward said fluid dispensing region to an extent effective to promote movement of hydraulic fluid expressed from said return fluid outlet toward the vicinity of said outgasing transfer portion.

Claim 48. (original) The system of claim 36 in which:

said return fluid outlet extending within said fluid receiving chamber is configured to promote the movement of hydraulic fluid expressed therefrom toward the vicinity of said outgasing transfer portion.